

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 1 and 3-13 are now present in this application. Claims 1, 3, 4, 6 and 7, 10, 11 and 12 are independent.

Claim 2 has been canceled, and claims 1, 6, 7, 10 and 13 have been amended. Reconsideration of this application, as amended, is respectfully requested.

Specification Objection

The Examiner has objected to the specification under 35 U.S.C. 132, asserting that it introduces new matter into the disclosure. Particularly, the Examiner states that this rejection was made because claim 13 includes 'wherein an optical axis of the second retardation film is perpendicular to that of the third retardation film'.

To overcome the Examiner's objection, Applicants have amended claim 13 to delete the portion objected to by the Examiner. The newly amended claim 13 is supported in the specification, and particularly on page 11, lines 21-22 of the original specification. Reconsideration and withdrawal of this objection are respectfully requested.

Rejection Under 35 U.S.C. § 112, 1st Paragraph

The Examiner rejected claim 13 under 35 U.S.C. 112, 1<sup>st</sup> paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention: "wherein an optical axis of the second retardation film".

To overcome the Examiner's rejection, Applicants have amended claim 13 to delete the portion upon which the Examiner's rejection is based. The newly amended claim 13 is supported in the specification, and particularly on page 11, lines 21-22 of the original specification. Reconsideration and withdrawal of this rejection are respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 5, 6, 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,204,904 to Tillin et al. (Tillin) in view of U.S. Patent No. 6,295,109 to Kubo. This rejection is respectfully traversed.

Claims 1, 6 and 10

Applicants respectfully submit that independent claim 1 has been amended to recite a combination of elements in a reflective liquid crystal display device including the retardation film which is made of one of a polymer and a

liquid crystal, said polymer and liquid crystal being an UV curable polymer and an UV curable liquid crystal, respectively. Independent claims 6 and 10 have been similarly amended. Applicants respectfully submit that the prior art of record, including Tillin and Kubo (either singly or in combination), fail to disclose or suggest the above-recited features of independent claims 1, 6 and 10.

Claims 1, 6 and 10, as amended, recite a combination of features in a liquid crystal device including said polymer and liquid crystal being an UV curable polymer and an UV curable liquid crystal, respectively. These features were formerly recited in independent claim 2 (now canceled), and are now included in independent claims 1, 6 and 10, as amended.

Examiner's Interviews Re Product-by-Process Issue

Applicants' representative discussed the Product-by-Process issue with the Examiner during telephone interviews conducted on February 9/10, 2003. The Examiner's position is that the feature "UV curable" is interpreted as "UV curing" and thus is a specific process. Applicants' representative argued that the designation "UV curable" is not a process, but rather describes an attribute of the polymer itself. In other words a UV-curable polymer is different from a polymer that is not UV curable.

Further, Applicants' representative set forth many examples of items that possess certain properties, attributes or capabilities, but do not require a process to be initiated in order to merely possess the particular property,

attribute or capability. The examples set forth by Applicants' representative included expandable band-aids, erasable ink, quick-drying glue, re-writable disc, retractable-arm, heat-resistant pad etc. The list goes on.

Applicants' representative argued that the above-mentioned items possess the described attributes whether the items are ultimately used in a capacity related to the attribute or not. Countering, the Examiner asserted that if two polymers were placed side by side, how could one tell which one was UV-curable? Applicants' representative asserted that this question could apply to many of the items described above as well (you can't tell the difference by just looking). As an example, Applicants' representative asserted that if identical items were placed side-by-side, one being made of polypropylene and the other made of polyethylene, the difference in composition could not be distinguished by mere observation.

The Examiner then asserted the UV curable polymer is well known in the art. Applicants' representative asserted that most materials of construction for semiconductor devices are well known in the art, but the devices in which they are employed are distinguishable in the manner the materials are used in constructing the particular devices. At the conclusion of the discussions, the Examiner stopped short of conceding to Applicants' arguments, but indicated that the Applicants' points were well taken. Further, the Examiner agreed to consider Applicants' arguments in an objective manner (in Applicants' Reply to the Office Action).

In view of the arguments set forth hereinabove, Tillin, in view of Kubo, cannot render independent claims 1, 6 and 10 obvious to one of ordinary skill in the art. Dependent claims 5 and 9, which similarly recite the above-argued features including "UV curable", are also not rendered obvious by Tillin in view of Kubo. Reconsideration and withdrawal of this art grounds of rejection are respectfully requested.

Claim 2

Applicants respectfully submit that claim 2 has been canceled, thus rendering its rejection under 35 U.S.C. 103 moot.

Claims 3-5, 7-8 and 11-13

Claims 3-5, 7-8 and 11-13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo in view of Applicants' disclosed related art (Applicants have not admitted to conventional art or prior art). This rejection is respectfully traversed.

At the outset, independent claims 3, 4, 11 and 12 all recite a combination of elements including a reflective electrode having a light transmitting hole, or a retardation film having a transmitting hole (or formed in a light transmitting hole), or a reflective electrode and a retardation film having a common light transmitting hole. Applicants respectfully submit that these

features are not disclosed or suggested by the prior art of record, including Kubo, or the Applicants' disclosed related art.

The Examiner asserts that Kubo discloses a reflective electrode (3) having at least one light transmitting hole (8). Applicants note that a device having both a reflective electrode region (3) and a transmissive electrode region (8) is disclosed only in Figs. 2, 3, 13A, 13B and 17. Accordingly, at the outset, only these figures can be applicable to the Examiner's rejection over Kubo, that is, if the Examiner is asserting that the transmissive electrode region 8 is a light transmitting hole (rather than an actual electrode). However, it is clear from the Kubo patent, that reference numeral 8 designates a transmissive electrode region, and not a literal hole in the electrode as asserted by the Examiner. Herein, it is evident that Kubo does not explicitly disclose a light transmitting hole. Accordingly, in the broadest application thereof, the Kubo reference must be withdrawn with respect to all of the claims rejected thereover. The claim rejections are argued below with more particularity.

Claims 4, 5, 7, 8, 12 and 13

The Examiner asserts that retarders exist in either Kubo or the Applicants' disclosed Related Art. However, the Examiner does not assert that either of the applied references disclose or suggest the particular arrangement of the retardation layers in Applicants' claimed invention.

Particularly, the Examiner states that "The arrangement of the retarder (50) above or below the substrate is quite irrelevant as far as the polarizing properties of the light is concerned, since the light that passes through the retarder (50) retains its polarization properties whether it goes through the retarder first and then through the substrate or goes through the substrate first and then through the retarder." Accordingly, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to adapt the arrangement of retarder/substrate/polarizer or the arrangement of substrate/retarder/polarizer.

The Examiner's above-recited line of reasoning includes presumptions that are unfounded. For, example, in concluding that the arrangement of the retarder is irrelevant, the Examiner adopts a presumption that the only advantage of the Applicants' claimed arrangement is to ensure that light will retain its polarization properties as it passes through the layers. However, the Applicants have cited other advantages of the claimed combinations over the related art, including assembly advantages. With regard to assembly advantages, Applicants respectfully submit that one of ordinary skill in the art would realize that it is particularly difficult to form a retardation film in a liquid crystal cell due to limitations such as thickness of the retardation film. In support of this submission, Applicants note that neither of the applied references show a retardation film formed adjacent a liquid crystal cell in any of the embodiments disclosed (it is difficult to do).

Applicants' original specification particularly cites advantages of Applicants' invention, which include assembly improvement and reduction in assembly error (page 6, line 11 and page 9, line 11), high brightness and color purity (page 6, line 13 and page 9, lines 7-16). On the other hand, a cited disadvantage of the related art device is that the lower retardation film 50 causes light loss in the transmissive mode, and brightness may be decreased (page 6, lines 5-6). Therefore the Examiner's claim that the arrangement is irrelevant (based on one presumed advantage, while omitting others) cannot stand.

Claims 4 and 12

The first retardation film and the reflective electrode recited in claim 4 and 12 have a light transmitting hole. This hole is common to the reflective electrode and the first retardation film. This feature is neither disclosed, nor suggested by Kubo. Therefore Kubo fails to disclose or suggest a reflective electrode on the second retardation film, the reflective electrode having the at least one light transmitting hole in common with the second retardation film, as recited in independent claim 12, and similarly stated in independent claim 4. The related art cannot fill this vacancy.

Claims 3 and 11

Independent claim 3 recites the first retardation film formed in the light transmitting hole. This feature is similarly recited in independent claim 11. In



the Office Action dated September 23, 2002, the Examiner does not assert that either Kubo or the Applicants' related art discloses or suggests this feature.

At the outset, reference numeral 8 designates a transmissive electrode region, and not a literal hole in the electrode, as asserted by the Examiner. Herein, it is evident that Kubo does not explicitly disclose a light transmitting hole. Yet more apparent, even if Kubo disclosed a light transmitting hole, Kubo fails to disclose a retardation film formed in a light transmitting hole.

Therefore Kubo fails to disclose or suggest the reflective electrode having at least one light transmitting hole and a first retardation film on a first surface thereof, the first retardation film formed in said light transmitting hole, as recited in independent claim 3, and similarly stated in independent claim 11. The related art cannot fill this vacancy.

Claim 7

With regard to independent claim 7, Kubo does not disclose a retardation layer that contacts a reflector. Particularly, Kubo fails to disclose or suggest a reflector having a transmitting portion over the first substrate, or a retardation layer contacting the reflector. The related art cannot fill this vacancy. In particular, the related art retardation layer contacts the lower polarizer 47 and lower substrate 53, but does not contact the reflective electrode 49 (see Fig. 4). In Fig. 2, the retardation layer contacts the polarizer 25 and upper substrate 13.

Claims 5, 8 and 13, depend, either directly or indirectly on independent claims 4, 7 and 12. Since neither Kubo, nor the related art discloses or suggest the above-recited features of independent claims 3, 4, 7, 11 and 12, Kubo, in view of the related art cannot render claims 3-5, 7-8 and 11-13 obvious to one of ordinary skill in the art. Reconsideration and withdrawal of this art grounds of rejection are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Percy L. Square, Registration No. 51,084, at (703) 205-8034, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

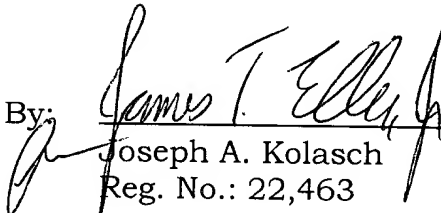
**Attached hereto is a marked-up version of the changes made to the application by this Amendment.**

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants respectfully petition for a two (2) month extension of time for filing a response in connection with the present application and the required fee of \$410.00 is attached herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By:  #39,538  
Joseph A. Kolasch  
Reg. No.: 22,463

JAK/PLS:asc

P.O. Box 747  
Falls Church, Virginia 22040-0747  
Telephone: (703) 205-8000

Attachment: Version with Markings to Show Changes Made

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

*In the Claims:*

Claim 2 has been canceled without prejudice or disclaimer of the subject matter contained therein.

The claims have been amended as follows:

1. (Twice Amended) A reflective liquid crystal display device, comprising:  
a first substrate having a reflective electrode on a first surface thereof;  
a second substrate having a polarizer and a retardation film, the polarizer formed on a second surface of the second substrate, the retardation film formed on a first surface of the second substrate; and  
a liquid crystal layer interposed between the first surface of the first substrate and the first surface of the second substrate,  
wherein the retardation film is made of one of a polymer and a liquid crystal, said polymer and liquid crystal being an UV curable polymer and an UV curable liquid crystal, respectively.

6. (Twice Amended) A reflective LCD device, comprising:  
a first substrate;  
a reflector over the first substrate;  
a liquid crystal layer over the first substrate;  
a retardation film over the liquid crystal layer, the retardation film being comprised of either polymer or liquid crystal, said polymer and liquid crystal being an UV curable polymer and an UV curable liquid crystal, respectively;

a second substrate over the retardation film, said retardation film being disposed on an inner surface of said second substrate; and  
a polarizer over the second substrate.

7. (Amended) A ~~transflective~~ [trasflective] LCD device, comprising:  
a first polarizer;  
a first substrate over the first polarizer;  
a reflector having a transmitting portion over the first substrate;  
a retardation layer contacting the reflector;  
a liquid crystal layer over the reflector;  
a second substrate over the liquid crystal layer;  
an upper retardation film positioned over or under the second substrate;  
and  
a second polarizer over the upper retardation film.

10. (Amended) A reflective liquid crystal display device, comprising:  
first and second substrates facing and spaced apart from each other;  
a polarizer on an outer surface of the first substrate;  
a retardation film on an inner surface of the first substrate, said retardation film being comprised of polymer or liquid crystal, said polymer and liquid crystal being an UV curable polymer and an UV curable liquid crystal, respectively;  
a reflective electrode on an inner surface of the second substrate; and  
a liquid crystal layer interposed between the retardation film and the reflective electrode.--

13. (Amended) The device according to claim 12, wherein [an optical axis of] the second retardation film [is perpendicular] ~~has a phase opposite~~ to that of the third retardation film.